

Validation Data for Determining
Toxic Levels of Minerals in Pet and
Livestock Foods using Microwave
Digestion and ICP-MS.

Microwave Digestion Method

0.25 – 0.5g of sample were digested with 5mls of distilled trace metal grade nitric acid, 2mls of hydrogen peroxide and 1ml of DDI water. Samples were allowed to predigest for 30min before placing in the microwave.

Microwave Heating Method

Ramp Time (m)	Temp (°C)	Hold Time (m)
10	120	5
3	150	5
3	180	5
3	200	10

Instrumentation

- CEM Mars5 Closed Vessel Microwave
- Thermo iCAP Q ICP-MS

Study Materials

SRM 1567b Wheat Flour

SRM 1573a Tomato Leaves

14c2576 Feed Scratch Grain

1432 Poultry Layer

1426 Medicated Pelleted Sheep Concentrate

2* LOQ (n=7)

sample	element	% rec	Preferred	CVr	Preferred
		mean	% rec		CVr
2576	Be	107	80-110	3.75	<22
2576	Al	106	80-115	4.15	<9
2576	Tl	104	80-110	4.89	<22
2576	Hg	104	70-125	9.41	<30
2576	U	102	80-115	8.10	<12
2576	Sb	106	80-115	5.41	<12
2576	Cd	109	75-120	10.96	<22
2576	Th	107	75-120	3.58	<15
2576	As	104	70-125	4.50	<18
2576	Pb	106	75-120	4.51	<16
2576	Se	100	80-110	7.76	<22
2576	Cr	93	90-107	8.69	<8
2576	Co	101	80-110	6.76	<16
2576	Mo	97	80-110	6.16	<16
2576	Ni	95	80-110	10.95	<16
2576	V	110	80-110	23.22	<22
1432	B	113	80-115	5.70	<9
1567b	Mn	104	80-110	6.80	<11
1567b	Zn	107	80-110	7.99	<11
1567b	Cu	104	80-110	6.63	<16
1567b	Fe	103	80-110	11.66	<11
1567b	Mg	102	90-107	8.54	<8
1567b	Ca	107	90-107	7.92	<8
1567b	P	106	95-105	7.35	<6
1567b	S	95	95-105	8.15	<6
1567b	K	103	95-105	8.37	<6

Midrange (n=7)

		mean	Preferred		Preferred
<u>sample #</u>	<u>element</u>	<u>% Rec</u>	<u>%Rec</u>	<u>CVr</u>	<u>CVr</u>
2576	Mn	107	90-108	3.62	<6
2576	Zn	111	90-108	4.63	<6
2576	Al	106	90-108	3.61	<6
2576	Be	106	92-106	8.01	<7
2576	Tl	106	80-110	4.96	<11
2576	Hg	84	75-120	6.96	<15
2576	Sb	109	85-110	3.45	<8
2576	Cd	113	80-115	9.47	<12
2576	Se	110	80-115	4.52	<13
2576	Cr	104	92-106	8.03	<7
2576	Mo	102	85-110	5.73	<8
2576	Ni	103	85-110	4.95	<8
2576	V	104	85-110	5.52	<9
2576	U	104	85-110	4.70	<8
2576	As	105	80-115	4.61	<10
2576	Co	107	80-115	5.97	<10
1432	Cu	101	90-108	5.72	<7
1432	Fe	98	90-108	8.00	<6
1432	B	108	85-110	5.73	<8
1567b	Mg	109	96-104	2.81	<5
2576	Th	102	96-104	3.85	<5
2576	Ca	106	96-104	4.91	<5
1567b	P	97	96-104	5.30	<5
1426	S	106	92-105	5.09	<5
1573a	K	103	92-105	3.25	<4
2576	Na	104	96-104	4.05	<5